Reply-To: bu.edu!INFO-HAMS@WSMR-SIMTEL20.ARMY.MIL
Subject: INFO-HAMS Digest V89 #967
To: INFO-HAMS@WSMR-SIMTEL20.ARMY.MIL

INFO-HAMS Digest Sun, 3 Dec 89 Volume 89 : Issue 967

Today's Topics:

Nintendo
S01MZ
Weather Facsimile Reception (2 msgs)

Date: Sun, 3 Dec 89 22:29 CST
From: Greg Landretti <LANDRETTI@vms.macc.wisc.edu>
Subject: Nintendo
Message-ID: <19120322290684@vms.macc.wisc.edu>

I lost my confidence in airport security over the past two years. During that period I have been travelling around the country carrying a portable packet station. I have carried it in carry-on as well as in check-in bags. However, mostly I carry it on because of the "apes". Only once did a security person ask to look inside the carry-on bag and that was in the rather small Nashville airport. I was never checked at LaGuardia, Kennedy or O'Hare.

The unusual part of it is that the station consists of a RS Model 100, 17 feet of coax, a 2 meter antenna constructed of #12 building wire (bent in half to fit in the case), a Kenwood HT, all connecting wire for radio and tnc, a PacComm Tiny 2 TNC, and a Radio Shack power supply. Now, if ANYTHING might look suspicious, this bag would. Not only should the wire create a problem but the capacitors in the power supply should have caught SOMEONES attention.

My confidence has been badly shaken in those folks. At least they could have asked a few questions so I would have been forced to tell them all about packet radio. Anyway, kinda makes me wonder if we are getting our moneys worth. Also, I'm glad I wasn't carrying my sons Nintendo. -Greg N9HCY

Gregory J. Landretti N9HCY
2300 Rugby Row, Madison, WI 53705 (608) 238-1323
WI Department of Revenue, P.O. Box 8933, Madison, WI 53708 (608) 266-8202
Internet: landretti@vms.macc.wisc.edu
Bitnet: landretti@wiscmacc

Date: 4 Dec 89 04:57:45 GMT

From: cs.utexas.edu!ut-emx!oo7@tut.cis.ohio-state.edu (Your Tax Dollars At Work)
Subject: S01MZ
Message-ID: <21813@ut-emx.UUCP>

  Someone asked about S01MZ on 15 cw today (03 Dec). This prefix is for Western Sahara. The W6GO/K6HHD Managers' List gives the QSL route as EA2JG, but this is probably an earlier operation. The operator today said "QSL via KV4AM". I was suspicious because the signal was extremely strong - but on the other hand so was a 6W (Senegal) on 10 cw at about the same time.

  If this operation is genuine, I'm surprised it hasn't been announced in either of the two DX newsletters I subscribe to. That doesn't mean it's phoney, although it's strange using the same call as that of the earlier operation from S0.

  As they say, WFWL - Work First, Worry Later - I did the same as the poster. I'm not spending 50c on two stamps until I know it's real :-)

Derek Wills (AA5BT, G3NMX)
Department of Astronomy, University of Texas,
Austin TX 78712. (512-471-1392)
oo7@astro.as.utexas.edu

P.S. - a tip: When KV4AM operated as T30MA in March 88, he did reply to cards sent with just an SASE, but he included a photocopied note to the effect that he would have liked contributions to cover the cost of at least the cards, so if it turns out to be a genuine operation and you want a QSL card, you might want to put a dime in the envelope as well :-)

Date: 4 Dec 89 04:14:14 GMT
From: rusty@wsmr-simtel20.army.mil
Subject: Weather Facsimile Reception
Message-ID: <RUSTY.89Dec3201414@garnet.berkeley.edu>

Here's more stuff:

Date: Wed, 8 Nov 89 08:33:00 EST
Reply-To: STORM-L@vmd.cso.uiuc.edu
Sender: STORM-L Storms and weather related info <STORM-L@vmd.cso.uiuc.edu>
From: 656-3799 BJ Backitis Information Systems Development
              <FRANKB@clemson.clemson.edu>
Subject: Re: Notes on Wefax Reception
To: "William T. Marchant"

        <marchant@sag4.ssl.Berkeley.EDU>,
"rusty c. wright" <rusty@garnet.berkeley.edu>

I would like to add something to Eric's posting on WEFAX reception (although, as complete as it was, it's hard to find something to add!).

NOAA (National Oceanic and Atmospheric Administration) has a department within it called NESDIS (National Environmental Satellite, Data, and Information Service). NESDIS has a series of WONDERFUL publications available concerning WEFAX, APT, the various satellites, and setting up a station capable of receiving the different signals. The best thing of all is that it is free! And what was very surprising was the speed, cooperation, and downright friendliness of the people I contacted at NOAA/NESDIS.

The person to contact is:

Ms. Mona F. Smith
E/PO2
NOAA/NESDIS
Room 806, World Weather Bldg
Washington, DC 20233

Phone 301-763-8062

In fact, I called her on the phone and found her extremely helpful and very friendly. I received a sizeable package of information in less than a week, which I am still going over a month later. If you tell her what you are interested in, she can recommend the appropriate articles and publications to get; here are ones I find worthwhile:

Educations Gude for Building and Operating Environmental Satellite
  Receiving Stations (NOAA Tech Report NESDIS 44) -- this is dated
  February 1989, and was written by a teacher in the science department
  of a Pennsylvania high school, concerning their set up of a WEFAX
  system for polar and geosynch satellites)

The WEFAX User's Guide -- need I say more?

NOAA Technical Memorandum NESS 95 -- concerns the various satellites
  and what each is capable of, as well as other fascinating information

TIROS-N Series Direct Readout Services Users Guide -- fantastic

NOAA Tech Memorandum NESS 116 -- also good, giving more detailed info
  about the topics covered in the two previous publications

She can also include a few other things she has at hand, plus put you
on a mailing list (although I haven't received anything else yet, so I
can't confirm this).

If you are serious about wanting to get involved in this, might as well
go straight to the source for the best information!!

BJ

BJ Backitis (KM4RB)	BJB@CLEMSON	We interrupt
Info. Systems Development	BJB@HUBCAP.CLEMSON.EDU	this program
Division of Computing & Information Technology	{..}!gatech!hubcap!bjb	to annoy you and generally
Clemson University, S.C.	Usual Disclaimers apply	irritate you

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rusty c. wright
rusty@violet.berkeley.edu ucbvax!violet!rusty

Date: 4 Dec 89 04:08:10 GMT
From: rusty@wsmr-simtel20.army.mil
Subject: Weather Facsimile Reception
Message-ID: <RUSTY.89Dec3200810@garnet.berkeley.edu>

Try going to your local ham/shortwave radio store and check their
books. ARRL puts out a book on weather fax that should explain what
you need. There's a weather fax mailing list; try sending email to
wefax-request@ida.org asking to be added to their list. And here's
something that was posted to the storm-l mailing list:

Date: Tue, 7 Nov 89 23:02:31 E
Reply-To: STORM-L@vmd.cso.uiuc.edu
Sender: STORM-L Storms and weather related info <STORM-L@vmd.cso.uiuc.edu>
From: Eric Roskos <roskos@IDA.ORG>
Subject: Notes on Wefax Reception
To: "William T. Marchant"
<marchant@sag4.ssl.Berkeley.EDU>,
"rusty c. wright" <rusty@garnet.berkeley.edu>

Chris Novy asked me several weeks ago to write up a short discussion of
what was required to receive weather satellite pictures, for STORM-L
subscribers who might be interested. I've finally found some time to

do it, so I am enclosing it in this message. It's written as notes rather than a polished article, but I hope it will prove useful. There are some books and addresses for equipment given at the end, as well as some information on the cost of a typical station. --E.R.

Some notes on weather satellite reception
E. Roskos 11/7/89

There are three sources of weather satellite imagery that are easily accessible by amateur users. These are HF (shortwave) broadcasts from NOAA's NMC radio station in San Francisco and the Navy's NAM radio station in Norfolk, VA; direct reception from polar orbiting satellites; and direct reception from geostationary satellites.

All these sources use variations of the APT (automatic picture transmission) format developed in the 1960s for use with fairly simple mechanical recording equipment. Surplus equipment from the 60s and 70s is available to record these images, but it is much more cost-effective to use a computer to record the images. The image quality is also usually better, except with the highest-cost equipment (surplus equipment which records on photographic film, and typically costs $1000-$2000, gives better pictures but also requires a lot of maintenance). The lower-priced (~$600) equipment either records on wet electolytic paper, which has limited contrast and limited resolution, or on plain paper using a carbon transfer process, which only gives solid black / solid white images, and is only suited to weather maps.

The APT format transmits in a raster image similar to that used by a television, but transmitted at a much slower rate: the HF and polar satellite transmissions send 2 scan lines per second, while the geostationary satellites send 4 scan lines per second. Because the data is transmitted so slowly, it is relatively easy to decode and display on a personal computer.

The following equipment is needed to receive these images:

1) An antenna. For HF transmissions, a regular long wire shortwave antenna, or a directional "beam" antenna, is used.

   For polar orbiting satellites, a "turnstile-reflector" antenna is the most economical; people wanting to receive a strong signal for the longest time possible sometimes build much more elaborate, rotatable antennas, but when starting out a turnstile-reflector (T-R) antenna is adequate. It consists of four pieces of wire of a specific length, mounted parallel to the ground in an X shape a specific distance above a reflector made of "hardware cloth" wire screen. This antenna actually consists of two dipole antennas mounted at 90 degrees to each other. The only difficult part of

building this antenna is that these two dipoles must be connected by a length of cable that will serve to delay the signal from one of the dipoles by 90 degrees relative to the other antenna. In reality, even this T-R antenna is not strictly necessary; a simple dipole antenna can be used, although periodic signal fading results. Another alternative is to use a discone antenna (about $90) made to receive VHF (police, fire, etc.) communications, or a VHF active antenna (about $300) if space is very limited.

For geostationary satellites, the best antenna is a dish antenna. "Loop yagi" antennas are also available that consist of a long rod with loops of aluminum spaced at specific intervals along it; I don't have any experience with these antennas, so I don't know 1sthand how well they work, but it's claimed they work reasonably well. The geostationary satellites are generally harder to receive and require more equipment, though, and the images produced by them are of relatively large areas, so polar satellites tend to be better for starting out, since they also give "close up" images of the local area.

2) A receiver. A high-end VHF scanner can be used if it provides at least a 30 MHz bandwidth, but only the higher-priced scanners provide this, since police and fire (and amateur) VHF communications use a much narrower bandwidth. A receiver with a bandwidth that is too narrow will not give usable pictures; most of the picture will have "snow" in it rather than an image. The best alternative is to buy a crystal-controlled receiver made specifically for the purpose; these are available for around $180 (plus crystals, which are around $15). I currently use a modified 2-meter amateur radio receiver, but it is not really adequate since it only has a 20 KHz bandwidth, and costs much more that a WEFAX receiver. Unless you have a receiver already that has the proper bandwidth, it is a good idea to buy one of the specifically-made WEFAX ones. In any case, the receiver must be able to receive the 137-138 MHz range; not all VHF receivers will receive this range, since it is specifically for weather satellites rather than voice.

   For receiving HF images, a conventional shortwave that can receive single sideband is sufficient. The $300-range receivers work reasonably well if they are fairly stable and can be tuned precisely enough, but reception of single sideband is required.

3) A downconverter, if you are receiving geostationary images. This converts the geostationary satellite's signal from its frequency of 1691 MHz, to the 137 MHz range which WEFAX and VHF receivers receive. You don't need a downconverter for anything but the geostationary satellites (this is one of the reasons the geostationary satellites could be considered a "more advanced" satellite to receive).

4) A preamplifier. This is only necessary if your signal from your

VHF antenna is not strong enough without it. If you use one, you should get one that can be mounted out at the antenna end of the transmission line, so it should be waterproof.

5) A demodulator. For polar and geostationary satellites, you need an AM demodulator; the AM refers to the fact that the audio tone produced by the receiver is a 2400 Hz amplitude modulated signal, rather than referring to an amplitude modulated carrier signal -- the RF signals from these satellites are FM. For receiving images from one of the HF stations, you need an FM demodulator, because these stations send an audio signal which varies in frequency from 1500 Hz to 2300 Hz, rather than varying in amplitude. Some of the FM demodulators you can buy (such as the A&A demodulator I use) really are just filters that convert the FM signal to an AM signal; you then have to input this to an AM demodulator to get the data you need to display the image. Thus to receive HF images you may need both an FM and AM demodulator.

6) Software to display the images on the screen. One of the better starter packages is from Elmer Schwittek in Florida; see below for his address. You can also write your own software if you are good at "real time" software.

7) A computer with a display capable of displaying at least 16 distinct shades of grey with at least a 640x480 pixel resolution; higher resolutions (720x540, 800x600, etc.) are better.

8) For the polar satellites, software for calculating when the satellite is coming by. The "ORBIT23" program on SIMTEL20 is the one I use for this, since it is public-domain.

That's basically all you need, although getting it all working, eliminating RF interference from the computer, etc., may require some general experience with radio. Receiving the HF images are the easiest, and require the least equipment and expertise, although depending on where you are and how good your antenna is, you may find the image quality is limited due to a weak signal. The signal for WEFAX images needs to be considerably better than is required simply to receive human-readable shortwave broadcasts, since the machine will interpret the noise as part of the image. I find that much of the time I only get a marginal image here, although I have only a very small antenna, and am not in the best location for receiving the nearby station.

Here is a typical station in terms of cost:

Antenna	$35 (build-it-yourself variety)
Receiver	180
Demodulators	85 (for both FM & AM together)

Software	50
	====
Total	$350

This doesn't include the computer, VGA board, and monitor. You can also use an EGA, but you have to have a monochrome display since an EGA can't display 16 shades of grey. There are also programs available for the CGA, but the CGA doesn't really have adequate resolution. If you are buying a new display adapter, it's best to pay the extra $100 and buy a VGA rather than an EGA; you get a lot more flexibility, and can still buy a monochrome VGA monitor for it for $120 if you need to cut costs somewhere. This is much better than buying an EGA and a color monitor, in my opinion, at least for the purpose of WEFAX images.

Following are some references and sources of equipment; I don't have experience with all the companies listed below, but they all sell equipment for WEFAX, and have been recommended by others in the past.

Books:

Martin R. Davidoff, The Satellite Experimenter's Handbook, published by the ARRL. This book is essential; it tells how to build the T-R antenna, tells about weather satellites, gives addresses to write for more information, and generally has the technical information you need to get started. Buy this book first.

Larry Van Horn, Communications Satellites, published by Grove Enterprises. This book is much less essential, but has a chapter on weather satellites that gives a lot of "vital statistics" about the satellites for those interested.

Georg Klingenfuss, Klingenfuss Facsimile Guide. A loose collection of facts about radio facsimile, particularly weather, but geared more towards European users. Klingenfuss's English is sometimes very hard to understand, and the data isn't very up-to-date compared to the other sources, but it does have some technical details not found in other books, as well as pictures -- most of the book is pictures of images from various stations, though many of them are in Europe. The equipment listed in the book tends to be high-end, expensive equipment, and isn't always the best available, so it's best not to rely too heavily on that part.

All the above books are available from most of the mail-order shortwave companies, and most are available from local ham radio dealers.

Sources:

Software Systems Consulting
1303 S. Ola Vista

San Clemente, CA 92672
(714) 498-5784

This company sells a complete package, including hardware, for $99.00. I have never used it, but it gets enthusiastic reviews from time to time on the Usenet. It seems to simply connect to the RS232 port of the PC, so I am not sure it gives grey-scale images -- maybe just black and white weather maps. It might be a good starter system for someone with a limited budget, however.

Elmer W. Schwittek
2347 Coach House Lane
Naples, FL 33942
(813) 434-2268

A good place to start; Schwittek sells three different compiled BASIC programs (object code only) for the IBM PC: one for the CGA, one for the EGA, and recently has added one for the VGA, each of which is around $50. The programs work with the demodulators from A&A Engineering (see below). The manual, though short, gives a good introduction to WEFAX, gives diagrams for the A&A boards in case

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End of INFO-HAMS Digest V89 Issue #967
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